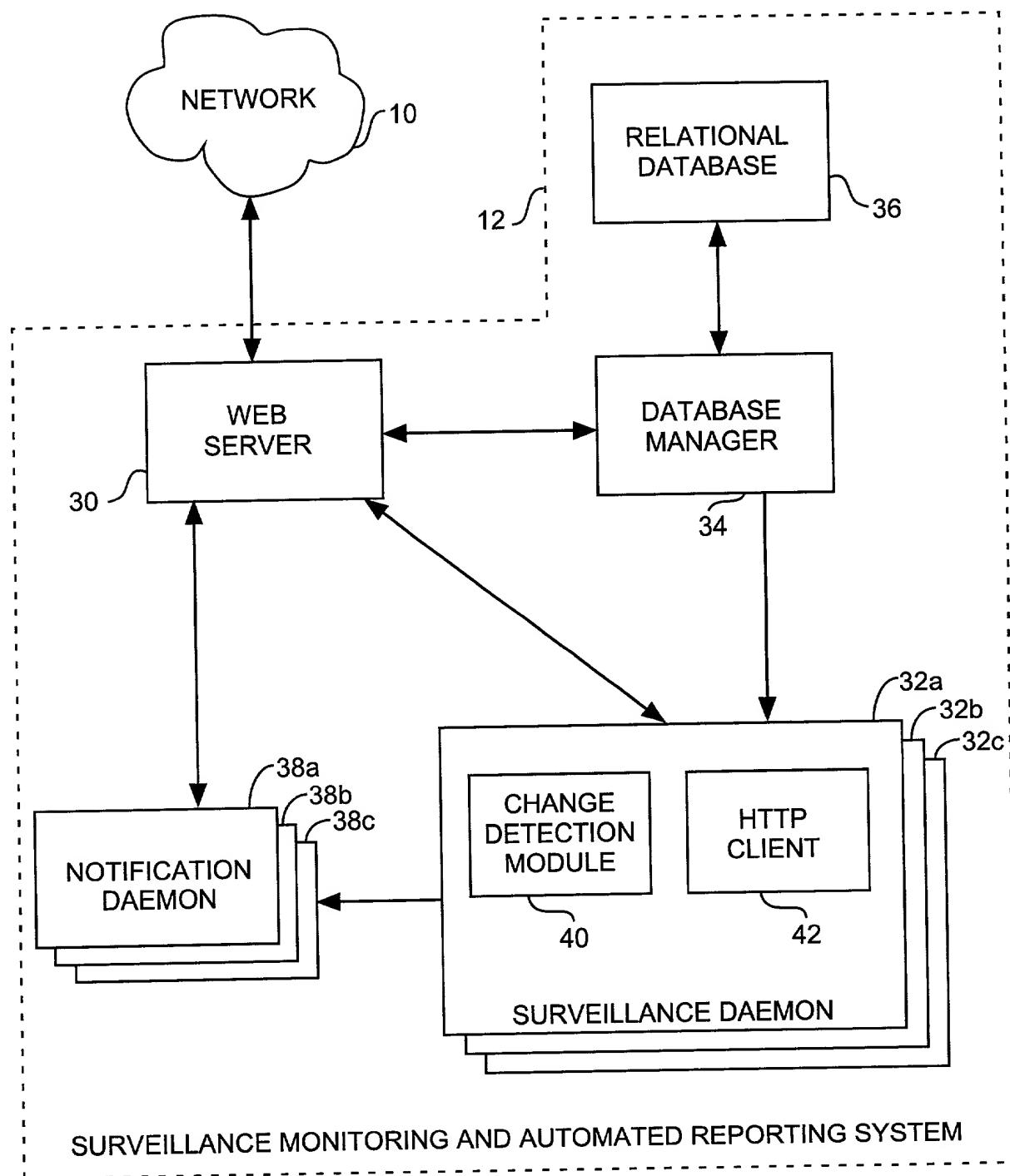


MONITORED DISTRIBUTED NETWORK

FIG. 1



SURVEILLANCE MONITORING AND AUTOMATED REPORTING SYSTEM

NETWORK CONNECTED MONITORING
AND REPORTING SYSTEM

FIG. 2

```
101  TOP LEVEL:  
102  
103  BEGIN  
104  
105  Update database: set the run flag of this daemon to TRUE;  
106  Create an empty list V for link storage;  
107  Set boolean Flag to TRUE;  
108  While Flag is TRUE:  
109  {  
110      Get the user's URL, search interval SI, and depth Depth;  
111  
112      Do searchURL(URL, Depth, 0);  
113      Get the value of the start-stop flag for this daemon from  
114          the database and assign it to Flag;  
115      If Flag is TRUE:  
116          {  
117              Sleep for SI * 60 seconds;  
118              Get the value of the start-stop flag for this daemon  
119                  and assign it to Flag;  
120          }  
121      }  
122  Update database: set the run flag of this daemon to FALSE;  
123  
124  END TOP LEVEL  
125  
126  
127
```

SURVEILLANCE DAEMON

FIG. 3

```

128  SUBROUTINE searchURL(URL, Depth, Level)
129
130  BEGIN
131
132  Create an empty list L for link storage;
133  Open two files for writing, an HTML file, and a formatted
134    text file (FT file);
135  Create a socket connection to the URL;
136  Request the HTML from the URL, one character at a time;
137  While there is still more data to read from the socket:
138  {
139    For each character returned from the URL:
140    {
141      Write the character to the HTML file;
142      If the character is the beginning of an HTML tag:
143      {
144        Read all characters to the end of the current
145        tag and store them in a string Tag;
146        Write Tag to the HTML file;
147        If Tag is a link to another URL:
148        {
149          Add the link to list L;
150        }
151      }
152      Else
153      {
154        Write the character to the FT file;
155      }
156    }
157  }
158 }
159
160 Convert the text in the FT file to one string FS, with each segment of
161 white space in FT replaced by a single blank in FS;
162

```

SURVEILLANCE DAEMON SUBROUTINE
HTTP CLIENT DATA RETRIEVAL PORTION

FIG. 4A

```

163 If the URL is the top-level URL (i.e., Level = 0)
164
165 {
166     Do changeDetection(URL, FS);
167
168
169
170     If there is a true change in the text:
171     {
172         Set TrueChange to TRUE;
173         Add the keyword hit counts generated by
174             changeDetection() to the database;
175         Generate an activity report;
176         Add the report to the database;
177         Send the report to the user via the user-specified
178             notification methods (email, pager, and/or PDA);
179     }
180     Else
181     {
182         Set TrueChange to FALSE;
183     }
184 }
185
186 Else
187 {
188     From the database, get the keywords associated with the
189         original top-level URL;
190     For each keyword W:
191     {
192         Count the number of occurrences N of W in FS;
193         Add N to the total keyword count T;
194     }
195     Insert the crawled-to URL, the keyword counts N for each
196         keyword W, and T into the database;
197 }
198
199

```

SURVEILLANCE DAEMON SUBROUTINE
CHANGE DETECTION PORTION

FIG. 4B

```
200 If TrueChange is TRUE OR Level is greater than 0:  
201  
202 {  
203     While List L is not empty:  
204         {  
205             Remove the first URL link U1 from list L;  
206             If Level is less than Depth:  
207                 {  
208                     {  
209                         If U1 is not in the list V:  
210                             {  
211                                 {  
212                                     If the domain of U1 is identical to the  
213                                     domain of the original top-level URL:  
214                                         {  
215                                             Insert U1 at the end of list V;  
216  
217  
218  
219                                         Do searchURL(U1,Depth,Level+1);  
220                                         }  
221                                         }  
222                                         }  
223                                         }  
224 }  
225  
226 END SUBROUTINE
```

SURVEILLANCE DAEMON SUBROUTINE
RECUSION PORTION

FIG. 4C

```

301  SUBROUTINE changeDetection(URL, FS)
302
303
304  BEGIN
305
306  Retreive the formatted text P of the previous version of the URL from
307  the database;
308  If at least one character of FS is different from P:
309  {
310      Replace P in the database with FS;
311      Retrieve the boolean keyword expression Exp associated with
312      URL from the database;
313      Search the new text FS using Exp;
314      If Exp is TRUE in FS:
315      {
316          Get the keywords associated with URL from the database;
317          For each keyword W:
318          {
319              Count the number of occurrences of W in FS;
320          }
321          Retrieve the keyword counts associated with the
322          previous version P from the database;
323
324          If at least one keyword count for FS is different from
325          the corresponding keyword count for the previous
326          version P:
327          {
328              A change between pervious version and new
329              version has been detected;
330          }
331          Else
332          {
333              No change is detected;
334          }
335          Else
336          {
337              No change is detected;
338          }
339          Else
340          {
341              No change is detected;
342          }
343
344  END SUBROUTINE

```

CHANGE DETECTION SUBROUTINE

FIG. 5